

**UNITED STATES DISTRICT COURT  
DISTRICT OF NEW JERSEY**

AMGEN, INC.

Plaintiff,

v.

SANDOZ INC., et al.

Defendants.

Civil Action No. 18-11026 (MAS)(DEA)  
(Consolidated)

*Document Electronically Filed*

**DEFENDANTS' NOTICE PURSUANT TO 35 U.S.C. § 282**

Defendants Dr. Reddy's Laboratories, Inc., Dr. Reddy's Laboratories, Ltd, and Sandoz Inc., Alkem Laboratories Ltd., MSN Laboratories Private Ltd., Pharmascience Inc, and Zydus Pharmaceuticals (USA) Inc. (collectively "Defendants") submit this notice pursuant to 35 U.S.C. § 282 to plaintiff Amgen, Inc. regarding U.S. Patent Nos. 7,427,638 ("the '638 Patent"), 7,893,101 ("the '101 Patent"), 8,455,536 ("the '536 Patent"), 8,093,283 ("the '283 Patent), and 10,092,541 ("the '541 Patent").

Defendants hereby incorporate by reference all pleadings, contentions, expert reports, and previous communications that identify any patents or publications that Defendants cite to show that claims 3 and 6 of the '638 Patent, claim 6 of the '536 Patent, claims 1 and 15 of the '101 Patent, claims 2 and 27 of the '283 Patent, and claims 2, 19, and 21 of the '541 Patent are invalid for one or more of the reasons under 35 U.S.C. § 101, *et seq.* If any of the patents and publications identified below were not previously produced in discovery, this statement supplements Defendants' discovery responses, contentions, and expert reports under Federal Rule of Civil Procedure 26(e).

Defendants provide the list of patents and publications below to satisfy section 282 of Title 35 of the United States Code. The fact that Defendants list these patents, publications, and

other information does not reflect that all, more, or any number of these patents or publications will ultimately be used by Defendants in the presentation of evidence at trial. Defendants further incorporate by reference all information concerning the references set forth below presented in their invalidity contentions, expert reports, and other pleadings and submissions. Unless noted, all pages of the listed patents and references are being cited. Therefore, no implication should be taken that reliance on all of the identified patents and publications is necessary to support any of Defendants' patent invalidity defenses.

Defendants reserve the right to amend or supplement this statement as appropriate.

### **PATENTS**

- U.S. Patent No. 8,629,173 (Issued Jan. 14, 2014 to Muller et al.)
- U.S. Patent No. 10,092,541 (Issued Oct. 9, 2018 to Day, et al.)
- U.S. Patent No. 6,962,940 (Issued Nov. 8, 2005 to Muller, et al.)
- U.S. Patent No. 7,208,516 (Issued Apr. 24, 2007 to Muller, et al.)
- U.S. Patent No. 7,427,638 (Issued Sep. 23, 2008 to Muller, et al.)
- U.S. Patent No. 7,659,302 (Issued Feb. 9, 2010 to Muller, et al.)
- U.S. Patent No. 7,893,101 (Issued Feb. 22, 2011 to Muller, et al.)
- U.S. Patent No. 8,455,536 (Issued Jun. 4, 2013 to Muller, et al.)
- U.S. Patent No. 8,802,717 (Issued Aug. 12, 2014 to Muller, et al.)
- U.S. Patent No. 9,018,243 (Issued Apr. 28, 2015 to Muller, et al.)
- U.S. Patent No. 9,724,330 (Issued Aug. 8, 2017 to Muller, et al.)
- U.S. Patent No. 9,872,854 (Issued Jan. 23, 2018 to Day, et al.)
- U.S. Patent No. 5,698,579 (Issued Dec. 16, 1997 to Muller, et al.)
- U.S. Patent No. 6,020,358 (Issued Feb. 1, 2000 to Muller, et al.)
- U.S. Patent No. 6,090,817 (Issued Jul. 18, 2000 to Manley, et al.)

- U.S. Patent No. 6,780,877 (Issued Aug. 24, 2004 to Kita, et al.)
- U.S. Patent No. 7,276,529 (Issued Oct. 2, 2007 to Muller, et al.)
- U.S. Patent No. 8,093,283 (Issued Jan. 10, 2012 to Muller, et al.)
- U.S. Patent No. 9,433,606 (Issued Sep. 6, 2016 to Muller, et al.)
- WO 2003/080049 (Published Oct. 2, 2003 to Schafer, et al.)
- WO 2001/401569 (Published Jun. 7, 2001 to Andersson, et al.)
- WO 92/11383 (Published Jul. 9, 1992 to Adair, et al.)
- WO 2000/25777 (Published May 11 2000 to Man, et al.)
- WO 2001/034606 (Published to May 17, 2001 to Muller, et al.)
- WO 2001/057036 (Published Aug. 9, 2001 to Marfat, et al.)
- WO 2011/063102 (Published May 26, 2011 to Zeldis)
- WO 2011/151372 (Published Dec. 8, 2001 to Moussy, et al.)
- European Patent Specification EP1485087 B1 (Published Aug. 26, 2009 to Schafer, et al.)
- European Patent Specification EP1752148 B1 (Published Jun. 23, 2007 to Man, et al.)

### **PUBLICATIONS**

- Patent Prosecution History of U.S. Patent No. 6,962,940
- Patent Prosecution History of U.S. Patent No. 7,208,516
- Patent Prosecution History of U.S. Patent No. 7,427,638
- Patent Prosecution History of U.S. Patent No. 7,659,302
- Patent Prosecution History of U.S. Patent No. 7,893,101
- Patent Prosecution History of U.S. Patent No. 8,455,536
- Patent Prosecution History of U.S. Patent No. 8,802,717
- Patent Prosecution History of U.S. Patent No. 9,018,243

- Patent Prosecution History of U.S. Patent No. 9,724,330
- Patent Prosecution History of U.S. Patent No. 9,872,854
- Patent Prosecution History of U.S. Patent No. 10,092,541
- Patent Prosecution History of U.S. Patent 6,020,358
- EP15177140.9, Annex A
- Barnette, M. "Phosphodiesterase 4 (PDE4) Inhibitors in Asthma and Chronic Obstructive Pulmonary Disease (COPD)," *Progress in Drug Research* 53:195-229 (1999)
- Burnouf, C., et al., "Phosphodiesterase 4 Inhibitors," Chapter 10 in *Annual Reports In Medicinal Chemistry* 33:91-109 (Doherty, Ed., 1998)
- Dyke, A., et al., "The therapeutic potential of PDE4 inhibitors," *Exp. Opin. Invest. Drugs* 8(9):1301-1325 (1999)
- Celgene Form 10-K for the fiscal year ended December 31, 1998
- Eder, E., et al., "The Possible Role of  $\alpha,\beta$ -unsaturated carbonyl compounds in mutagenesis and carcinogenesis," *Toxicology Letters* 67:87-103 (1993)
- Williams, D., "Drug Metabolism," Chapter 8 in *Principles of Medicinal Chemistry*, pp. 83-141 (Foye, W., et al., Eds., 4th ed. 1995)
- Mercurio, A., et al., "A Mini-Review on Thalidomide: Chemistry, Mechanisms of Action, Therapeutic Potential and Anti-Angiogenic Properties in Multiple Myeloma," *Current Medicinal Chemistry* 24: 1-9 (2017)
- Norman, P. "PDE4 Inhibitors 1999," *Exp. Opin. Ther. Patents* 9(8): 1101-18 (1999)
- Park, B.K., et al., "Role of Drug Disposition in Drug Hypersensitivity: A Chemical, Molecular, and Clinical Perspective," *Chem. Res. Toxicol.* 11(9):969-988 (September 1998)
- Davis, T.G., et al., "The Identification of a Novel PDE4 Inhibitor, EPPA-1, with Improved Therapeutic Index using Pica Feeding in Rats as a Measure of Emetogenicity," DOI:10.1124/jpet.109.152454 (published on June 4, 2009)
- Bezmenova, T.E., et al., "Deuterium Exchange in a Number of 3-Substituted Sulfones," *Academy of Sciences of the Ukrainian SSR, Kiev. Translated from Khimiya Geterotsiklicheskikh Soedinenii*, No. 8:1067-71 (August 1975)

- Thalomid™ (thalidomide) Capsules Revised Package Insert (15 July 1998)
- FDA Approval Letter for Thalomid (thalidomide) capsules, NDA 20-785
- PsO PCP ATU Study Report Q4 2018
- Andersson, S., et al. "Preparative chiral chromatographic resolution of enantiomers in drug discovery," J. Biochem. Biophys. Methods 54:11-23 (2002)
- Wainer, I., ed. Drug Stereochemistry, Analytical Methods and Pharmacology, Chapters 6-8 and 16 (2d Ed. 1993)
- "Crystallization and Sublimation," Laboratory Experiments in Organic Chemistry (Roger Adams et al. eds., 6th ed.) (1970)
- Akazome et al., "Asymmetric recognition of 1-arylethylamines by (R)-phenylglycyl-(R)-phenylglycine and its mechanism," Tetrahedron: Asymmetry, 8(14): 2331–2336 (1997)
- Ansel et al., Pharmaceutical Dosage Forms and Drug Delivery Systems (7th ed.) (1999)
- ARAVA 2003 Label
- "A Phase II, Multicenter, Randomized, Double-blind, Placebo-controlled, Parallel-group, Efficacy and Safety Study of CC-10004 in Subjects with Active Psoriatic Arthritis," Clinical Trial No. NCT00456092 v.7 (July 26, 2013)
- "A Study to Evaluate the Efficacy and Safety of Apremilast (CC-10004) in the Treatment of Behcet Disease," Clinical Trial No. NCT00866359 v.6 (April 15, 2010)
- Ariëns, E.J. "Stereochemistry, a Basis for Sophisticated Nonsense in Pharmacokinetics and Clinical Pharmacology," European Journal of Clinical Pharmacology, 26: 663–668 (1984)
- Wells and Auton, "Preformulation," Pharmaceutics: The Science of Dosage Form Design (Michael E. Aulton ed.) (1988)
- Bastin, R., et al., "Salt Selection and Optimization Procedures for Pharmaceutical New Chemical Entities," Org. Proc. Res. Dev., 4(5): 427-435 (2000)
- Borka, L. and Haleblan, J., "Crystal Polymorphism of Pharmaceuticals," Journal Acta Pharmaceutica Jugoslavia 40:71-94 (1990)
- Brittain, H.G., "Spectral Methods for the Characterization of Polymorphs and Solvates," Journal of Pharmaceutical Sciences 86(4):405-412 (1997)

- Brittain, H.G. "Methods for the Characterization of Polymorphs and Solvates," in Polymorphism in Pharmaceutical Solids (H. Brittain ed., Vol. 95 1999)
- Burnouf et al., "Chapter 10. Phosphodiesterases 4 Inhibitors," Annual Reports in Medicinal Chemistry, 33: 91–109 (1998)
- Byrn, S.R., et al., "Solid-State Pharmaceutical Chemistry," Journal of Chemistry of Materials, 6: 1148-1158 (1994)
- Byrn, S., et al., "Pharmaceutical Solids: A Strategic Approach to Regulatory Considerations," Journal Pharmaceutical Research, 12(7): 945-54 (1995)
- Byrn et al., Solid-State Chemistry of Drugs (2d ed.) (1999)
- Caira, M.R., "Crystalline Polymorphism of Organic Compounds," Design of Organic Solids, pp. 164-208 (1998)
- EP 1 752 148 Prosecution History, EP Application 06023050.5
- U.S. Patent Application No. 11/106,142 Prosecution History (March 18, 2008 Applicant Amendment and Response)
- "A Phase 2B, Multicenter, Randomized, Double-Blind, Placebo-Controlled, Dose-Ranging, Efficacy and Safety Study of Apremilast (CC-10004) in Subjects with Moderate-to-Severe Plaque-Type Psoriasis (Core Study)," Clinical Trial No. NCT00773734 Study Details (Oct. 16, 2008)
- "Open-Label Study to Assess the Safety and Efficacy of Apremilast in Patients with Chronic Plaque Psoriasis Who Have Failed One Course of Biologic Therapy," Clinical Trial No. NCT01200264 Study Details (Sept. 13, 2010)
- "A Phase 2, Multi-center, Randomized, Double-blind, Placebo-controlled, Parallel-group Study Followed by an Active-Treatment Extension to Evaluate the Efficacy and Safety of Apremilast (CC-10004) in the Treatment of Behcet Disease," Clinical Trial No. NCT00866359 Study Details (March 20, 2009)
- U.S. Patent Appl. No. 11/106,142 Prosecution History (November 30, 2007 Non-Final Rejection)
- Egawa, T., et al., "Rolipram and Its Optical Isomers, Phosphodiesterase 4 Inhibitors, Attenuated the Scopolamine-Induced Impairments of Learning and Memory in Rats," The Japanese Journal of Pharmacology, 75: 275–281 (1997)
- FDA Guidance for Industry, INDs for Phase 2 and Phase 3 Studies: Chemistry, Manufacturing, and Controls Information (May 2003)

- FDA Guidance for Industry, ANDAs: Pharmaceutical Solid Polymorphism: Chemistry, Manufacturing, and Controls Information (July 2007)
- “FDA’s Policy Statement for the Development of New Stereoisomeric Drugs,” *Chirality*, 4:338-340 (1992)
- FDA Guidance: Development of New Stereoisomeric Drugs (May 1, 1992)
- U.S. Patent Appl. No. 14/209,874 Prosecution History (July 11, 2016 Final Rejection)
- U.S. Patent Appl. No. 14/209,874 Prosecution History (September 8, 2016 Applicant Amendment and Response)
- U.S. Patent Appl. No. 14/826,027 Prosecution History (March 13, 2017 Final Rejection)
- U.S. Patent Appl. No. 14/826,027 Prosecution History (May 19, 2017 Applicant Amendment and Response)
- “Crystallization,” *Organic Experiments* (Fieser, L. and Williamson, K., eds., 3d ed.) (1975)
- Guillory, J.K., “Generation of Polymorphs, Hydrates, Solvates and Amorphous Solids,” *Polymorphism in Pharmaceutical Solids*, Vol. 95 pp. 183-226 (Brittain, ed.) (1999)
- Hansch, C., et al., “‘Aromatic’ Substituent Constants for Structure-Activity Correlations,” *Journal of Medicinal Chemistry*, 16(11): 1207-1216 (1973)
- ICH Harmonised Tripartite Guideline, Dose-Response Information to Support Drug Registration (March 10, 1994)
- ICH Harmonised Tripartite Guideline, Specifications: Test Procedures and Acceptance Criteria for New Drug Substances and New Drug Products: Chemical Substances” (1999)
- Marriott, J., et al., “Immunotherapeutic and antitumor potential of thalidomide analogues,” *Expert Opin. Biol. Ther.*, 1(4): 675–682 (2001)
- Wu, A. et al., "First-time-in-man,safety/tolerability and pharmacokinetics of ascending oral doses of apremilast (APR) in healthy subjects (HS), *J. Invest. Derm.*, Abstracts 131 (S86): 515 (2011)
- Jozwiakowski, M.J., “Alteration of the Solid State of the Drug Substance: Polymorphs, Solvates, and Amorphous Forms,” *Water-Insoluble Drug Formation*, Chpt. 15, pp. 525-567 (2000)

- Kavanaugh, A., “Treatment of psoriatic arthritis in a phase 3 randomised, placebo-controlled trial with apremilast, an oral phosphodiesterase 4 inhibitor,” *Ann. Rheum. Dis.*, 73: 1020-1026 (2014)
- Keller, T., et al., “Synthesis and Structure-Activity Relationship of N-Arylrolipram Derivatives as Inhibitors of PDE4 Enzymes,” *Chem. Pharm. Bull.*, 49(8): 1009–1017 (2001)
- Kleinman, E., et al., “Striking Effect of Hydroxamic Acid Substitution on the Phosphodiesterase Type 4 (PDE4) and TNF $\alpha$  Inhibitory Activity of Two Series of Rolipram Analogues: Implications for a New Active Site Model of PDE4,” *Journal of Medicinal Chemistry*, 41: 266-270 (1998)
- “Crystal Properties and Polymorphism,” *Pharmaceutical Dosage Forms: Tablets* pp. 34-41 (Herbert A. Lieberman et al. eds., 2d ed.) (1989)
- Luke, G., et al., “Synthesis of (S)-5-(1-aminoethyl)-2-(cyclohexylmethoxy)benzamide,” *Tetrahedron: Asymmetry*, 10: 4393–4403 (1999)
- Man, H., et al., “Discovery of (S)-N-{2-[1-(3-Ethoxy-5-methoxy-phenyl)-2-methanesulfonyl-ethyl]-1,3-dioxo-2,3-dihydro-1H-isoindol-4-yl}acetamide (Apremilast), a Potent and Orally Active Phosphodiesterase 4 and Tumor Necrosis Factor- $\alpha$  Inhibitor,” *J. Med. Chem.*, 52: 1522-1524 (2009)
- McCann, F., et al., “Apremilast, a novel PDE4 inhibitor, inhibits spontaneous production of tumour necrosis factor-alpha from human rheumatoid synovial cells and ameliorates experimental arthritis,” *Arthritis Research & Therapy*, 12: R107 (2010)
- Mease, P., et al., “Etanercept in the Treatment of Psoriatic Arthritis and Psoriasis: A Randomized Trial,” *Lancet*, 356: 385-390 (2000)
- Mizutani, H., et al., “Role of increased production of monocytes TNF-alpha, IL-beta, and IL-6 in psoriasis: relation to focal infection, disease activity and responses to treatment,” *Journal of Dermatological Science*, 14(2): 145–53 (1997)
- Morris, K.R., “Structural Aspects of Hydrates and Solvates,” *Polymorphism in Pharmaceutical Solids*, Vol. 95, pp. 125-180 (Brittain, ed.) (1999)
- Muller, G. et al., “Structural Modifications of Thalidomide Produce Analogs with Enhanced Tumor Necrosis Factor Inhibitory Activity,” *Journal of Medicinal Chemistry*, 39(17): 3238–3240 (1996)
- Muller, G., et al., “Thalidomide Analogs and PDE4 Inhibition,” *Biorg. Med. Chem. Lett.*, 8: 2669–2674 (1998)



- Muller, G., et al., “Amino-substituted thalidomide analogs: Potent inhibitors of TNF- $\alpha$  production,” *Bioorganic & Medicinal Chemistry Letters*, Vol. 9 Issue 11, 1625-1630 (1999)
- Namenda<sup>®</sup> 10/2013 Label
- Newman, P. “Optical Resolution Procedures for Chemical Compounds: Amines and Related Compounds,” Section 4: Optical Resolution Information Center, pp. 583-590 (1984)
- “Open-Label, Single-Arm Pilot Study to Evaluate the Pharmacodynamics, Pharmacokinetics, Safety, and Preliminary Efficacy of CC10004 in Subjects with Severe Plaque Type Psoriasis,” Clinical Trial No. NCT00604682 Study Details (first posted January 30, 2008)
- EP 2276483 Excerpts of opposition proceedings, revocation, and experimental report
- Otezla<sup>®</sup> 04/2020 Label
- Otezla<sup>®</sup> 12/2015 Label
- Otezla<sup>®</sup> 09/2014 Label
- “A Phase 3, Multicenter, Randomized, Double-blind, Placebo-controlled, Parallel-group, Efficacy and Safety Study of Two Doses of Apremilast (CC-10004) in Subjects with Active Psoriatic Arthritis,” Clinical Trial No. NCT01212757 v. 5 (August 28, 2012)
- Palfreeman et al., “New developments in the management of psoriasis and psoriatic arthritis: a focus on apremilast,” *Drug Design, Development and Therapy*, 7: 201-210 (2013)
- Papp, K., et al., “Efficacy of Apremilast in the Treatment of Moderate to Severe Psoriasis: A Randomised Controlled Trial,” *The Lancet*, 380: 738-746 (2012)
- Papp et al., “Oral Apremilast is Active in the Treatment of Moderate to Severe Plaque Psoriasis: Results from a Phase 2b, Randomized, Controlled Study (PSOR-005),” *J. Investigative Dermatology*, 131:S46 273 (2011)
- Partsch, G., et al., “Highly Increase Levels of Tumor Necrosis Factor- $\alpha$  and Other Proinflammatory Cytokines in Psoriatic Arthritis Synovial Fluid,” *J. Rheumatology*, 24(3): 518-523 (1997)
- Patani, G., et al., “Bioisosterim: A Rational Approach to Drug Design,” *Chem. Rev.*, 96(8): 3147–3176 (1996)

- Pathan, E., et al., “Efficacy and safety of apremilast, an oral phosphodiesterase 4 inhibitor, in ankylosing spondylitis,” *Annals of the Rheumatic Diseases*, 0: 1-6 (2012)
- “Technique 3: Crystallization: Purification of Solids,” *Introduction to Organic Laboratory Techniques: A Contemporary Approach*, pp. 522-532 (Pavia, D., et al., eds., 3d ed.) (1988)
- Scheffler, M.R., et al., “The Safety, Tolerability, and Pharmacokinetics of CC-1088, A Novel TNF-Alpha Inhibitor, Given As Single, Oral Doses of 50 MG to 1 Gm,” *AAPS Published Meeting Abstracts* (November 1999)
- Schett, G., et al., “Apremilast: a novel PDE4 inhibitor in the treatment of autoimmune and inflammatory diseases,” *Therapeutic Advances in Musculoskeletal Disease*, 2(5): 271-78 (2010)
- Schett, G., et al., “Oral apremilast in the Treatment of Active Psoriatic Arthritis,” *Arthritis & Rheumatism*, 64(10): 3156-3167 (October 2012)
- Semmler, J., et al., “The Specific Type IV Phosphodiesterase Inhibitor Rolipram Suppresses Tumor Necrosis Factor- $\alpha$  Production by Human Mononuclear Cells,” *Int. J. Immunopharmac.*, 15(3): 409–413 (1993)
- Schafer, P., “Apremilast mechanism of action and application to psoriasis and psoriatic arthritis,” *Biochemical Pharmacology*, 83: 1583-90 (January 10, 2012)
- Shire, M. and Muller, G. “TNF- $\alpha$  inhibitors and rheumatoid arthritis,” *Exp. Opin. Ther. Patents.*, 8(5): 531-544 (1998)
- Simonneau, G., et al., “Selexipag, an oral, selective IP receptor agonist for the treatment of pulmonary arterial hypertension,” *Eur. Respir. J.* 40:874-880 (2012)
- Souness, J., et al., “Evidence That Cyclic AMP Phosphodiesterase inhibitors suppress TNF $\alpha$  Generation From Human Monocytes By Interacting With A ‘low-affinity’ Phosphodiesterase 4 Conformer,” *British Journal of Pharmacology*, 118: 649–658 (1996)
- Takeuchi, Y., et al., “(R)- and (S)-3-Fluorothalidomides: Isosteric Analogues of Thalidomide,” *Organic Letters*, 1(10): 1571–1573 (1999)
- Tenor, H., et al., “Pharmacology, Clinical Efficacy, and Tolerability of Phosphodiesterase-4-Inhibitors: Impact of Human Pharmacokinetics,” *Handbook of Experimental Pharmacology* 204: Phosphodiesterases as Drug Targets, 85-119 (2011)
- Teo, S., et al., “Pharmacokinetics of the Thalidomide Analogue CC-1088 After Multiple Oral Dose In Healthy Male Subjects,” *AAPS Published Meeting Abstracts* (November 1999)

- Threlfall, T.L., “Analysis of Organic Polymorphs: A Review,” *The Analyst*, 120(10): 2435-2460 (1995)
- U.S. Patent Application Publication 2009/0028794 A1 (Published Jan. 29, 2009 to Medich, et al.)
- U.S. Patent Application Publication 2003/0187052 A1 (Published Oct. 2, 2003 to Muller, et al.)
- U.S. Patent Application Publication No. 2006/0183787 A1 (Published Aug. 17, 2006 to Muller, et al.)
- U.S. Patent Application Publication No. 2009/0186923 A1 (Published July 23, 2009 to Armer, et al.)
- U.S. Patent Application Publication No. 2011/0112307 A1 (Published May 12, 2011 to Muller, et al.)
- The United States Pharmacopeia (USP 23): The National Formulary (NF18), United States Pharmacopeia 1837-1838, 1843-1844, 1985-1986 (1995)
- The United States Pharmacopeia (USP 23): The National Formulary (NF18), United States Pharmacopeia 2081, 2088-2089, 2271 (2002)
- Vogel’s Textbook of Practical Organic Chemistry (Furniss, B., et al., eds. 5th ed.) (1989)
- Wachtel, H. “Neurotropic effects of the optical isomers of the selective adenosine cyclic 3’, 5’-monophosphate phosphodiesterase inhibitor rolipram in rats in-vivo,” *Journal of Pharmacy and Pharmacology*, 35: 440–444 (1983)
- Waldeck, B. “Biological Significance of the Enantiomeric Purity of Drugs,” *Chirality*, 5: 350–55 (1993)
- Williams, K. “Enantiomers in arthritic disorders,” *Pharmacology & Therapeutics*, 46: 273–295 (1990)
- Wnendt, S., et al., “Enantioselective Inhibition of TNF- $\alpha$  Release by Thalidomide and Thalidomide-Analogues,” *Chirality*, 8: 390–96 (1996)
- Yu, L., et al., “Physical Characterization of Polymorphic Drugs: An Integrated Characterization Strategy,” *Pharmaceutical Science and Technology Today*, 1(3): 118-127 (1998)
- Zwingenberger, K., et al., “Immunomodulation by Thalidomide: Systematic Review of the Literature and of Unpublished Observations,” *Journal of Inflammation*, 46: 177–211

(1996)

- Muller, G. "Thalidomide: From Tragedy to New Drug Discovery," Chemtech, 21–25 (January 1997)
- Wells, J. Pharmaceutical Preformulation: The Physiochemical Properties of Drug Substances pp. 28-90 (1988)
- Gladman, D. Current concepts in psoriatic arthritis. Current Opinion in Rheumatology 14:361-366 (2002)
- "A Phase II, Multicenter, Randomized, Double-blind, Placebo-controlled, Parallel-group, Efficacy and Safety Study of CC-10004 in Subjects with Active Psoriatic Arthritis," Clinical Trial No. NCT00456092 v. 6 (Feb. 1, 2010)
- "A Phase 2, Multi-center, Randomized, Double-blind, Placebo-controlled, Parallel-group Study Followed by an Active-Treatment Extension to Evaluate the Efficacy and Safety of Apremilast (CC-10004) in the Treatment of Behcet Disease," Clinical Trial No. NCT00866359 v1 (March 19, 2009)
- Schaal, S., et al. "The Therapeutic Profile of Rolipram, PDE Target and Mechanism of Action as a Neuroprotectant following Spinal Cord Injury," PLoS ONE 7(9): e43634 (September 2012)
- Nio, Y., et al. "Phosphodiesterase 4 inhibitor and phosphodiesterase 5 inhibitor combination therapy has antifibrotic and anti-inflammatory effects in mdx mice with Duchenne muscular dystrophy," The FASEB Journal 31:5307-5320 (December 2017)
- Kranz, K., et al. "Phosphodiesterase Type 4 Inhibitor Rolipram Improves Survival of Spiral Ganglion Neurons In Vitro," PLoS ONE 9(3): e92157 (March 2014)
- Rosmarin, D., et al. "Cyclosporine and psoriasis: 2008 National Psoriasis Foundation Consensus Conference," J. Am. Acad. Dermatol. 62(5):838-853 (May 2010)
- Kalb, K., et al. "Methotrexate and psoriasis: 2009 National Psoriasis Foundation Consensus Conference," J. Am. Acad. Dermatol. 60(5): 824-837 (May 2009)
- Bayley, C.R. and Vaidya, N.A., "Resolution of Racemates by Diastereomeric Salt Formation," in Chirality in Industry (Collins, A.N., et al., eds. 1992)
- Stirling, D.I., "The Use of Aminotransferases for the Production of Chiral Amino Acids and Amines," Chirality in Industry (A.N. Collins, et al., eds. 1992)
- McMurry, J., "Stereochemistry," in Fundamentals of Organic Chemistry (4th ed.) (1998)

- Guideline for Submitting Supporting Documentation in Drug Applications for the Manufacture of Drug Substances,” Center for Drug Evaluation and Research, Food and Drug Administration, Department of Health and Human Services, February 1987
- Lennard, M.S., “Clinical Pharmacology Through the Looking Glass: Reflections On The Racemate vs Enantiomer Debate,” *Br. J. Clin. Pharmac.* 31:623-625 (1991)
- York, P., “The design of dosage forms,” in *Pharmaceutics, The science of dosage form design* (Aulton, M.E., ed.) (1988)
- Rudnic, E., “Oral Solid Dosage Forms,” *Remington: The Science and Practice of Pharmacy* (19th ed.) Vol. II, Ch. 92 (1995)
- Peters, B., et al., “Pathopsychology and treatment of psoriasis,” *Am. J. Health-Syst Pharm* Vol. 57: 645-659 (April 1, 2000)
- Brockbank, J. and Gladman, D. “Psoriatic arthritis,” *Exp. Opin. on Invest. Drugs* 9(7): 1511-1522 (2000)
- Greaves, M. and Weinstein, G. “Treatment of Psoriasis,” *The New England Journal of Medicine* 332(9): 581-587 (1995)
- Bordwell, F.G., et al., “Homolytic Bond Dissociation Energies of Acidic C-H Bonds Activated by One or Two Electron Acceptors,” *J. Org. Chem.*, 56(14): 4448-4450 (1991)
- Bordwell, F.G., “Electrical Effects of the Sulfonyl Group,” *Intl. J. Sulfur Chem., Part B., Quarterly Reports on Sulfur Chemistry Journal*, Vol. 7, Issue 3: 187-188 (1972)
- Evans, D.A. and Ripin, D.H., *pKaTable*
- Radeaglia, R., et al., “PMR spectroscopic studies for deuteration of dialkylsulfones,” *Monatsberichte der Deutschen Akademie der Wissenschaften zu Berlin* 11(5-6): 366-369 (1969) (Abstract)
- Revlimid® 10/2019 Prescribing Information
- Nicholson, C., et al., “Differential modulation of tissue function and therapeutic potential of selective inhibitors of cyclic nucleotide phosphodiesterase isoenzymes,” *TiPS* 12:19 (1991)
- Torphy, T. and Page, C., “Phosphodiesterases: the journey towards therapeutics,” *TiPS* 21:157 (2000)
- Burnouf, C., et al., “Recent Advances in PDE4 Inhibitors as Immunoregulators and Anti-Inflammatory Drugs,” *Current Pharm. Design* 8(14):1255 (2002)

- Teixeira, M., et al., “Phosphodiesterase (PDE)4 inhibitors: anti-inflammatory drugs of the future?” *TIPS* 18:164 (1997)
- Spina, D., et al., “The Role of Phosphodiesterase Enzymes in Allergy and Asthma,” *Advances in Pharmacology* 44:33 (1998)
- Tenor, H., et al., “2. Analysis of PDE Isoenzyme Profiles in cells and Tissues by Pharmacological Methods,” in *Phosphodiesterase Inhibitors* pp. 21-40 (C. Schudt, et al. eds.1996)
- Dent, G., et al., “7. Interaction of PDE4 Inhibitors with Enzymes and Cell Functions,” in *Phosphodiesterase Inhibitors* pp. 111-126 (Schdt, C., et al., eds. 1996)
- Gantner, F., et al., “In vitro differentiation of human monocytes to macrophages: change of PDE profile and its relationship to suppression of tumour necrosis factor- $\alpha$  release by PDE inhibitors,” *British J. Pharmacology* 121:221-231 (1997)
- Stawiski, M., et al., “Ro 20-1724: An Agent that Significantly Improves Psoriatic Lesions in Double-Blind Clinical Trials,” *J. Investigative Dermatology* 73(4):261-263 (1979)
- Billi, A., et al., “Psoriasis: Past, Present, and Future,” *J. Invest. Dermatol.* 139(11): e133-e142 (2019)
- Austin, L., et al., “The Majority of Epidermal T Cells in Psoriasis Vulgaris Lesions can Produce Type 1 Cytokines, Interferon- $\gamma$ , Interleukin-2, and Tumor Necrosis Factor- $\alpha$ , Defining TCI (Cytotoxic T Lymphocyte) and TH1 Effector Populations: a Type 1 Differentiation Bias is also Measured in Circulating Blood T Cells in Psoriatic Patients,” *J. Investigative Dermatology* 113(5):752-759 (1999)
- Tenor, H., et al., “Identification of Phosphodiesterase IV Activity and Its Cyclic Adenosine Monophosphate-Dependent Up-Regulation in a Human Keratinocyte Cell Line (HaCaT),” *J. Investigative Dermatology* 105(1):70-74 (1995)
- Schudt, C., et al., “Influence of selective phosphodiesterase inhibitors on human neutrophil functions and levels of cAMP and Cai,” *Naunyn-Schmiedeberg’s Archives of Pharmacology* 344:682-690 (1991)
- Au, B-T., et al., “Effect of PDE4 inhibitors on zymosan-induced IL-8 release from human neutrophils: synergism with prostanoids and salbutamol,” *British J. Pharmacology* 123:1260-1266 (1998)
- Bundschuh, D., et al., “In Vivo Efficacy in Airway Disease Models of Roflumilast, a Novel Orally Active PDE4 Inhibitor,” *J. Pharmacology and Experimental Therapeutics* 297:280-290 (2001)

- Apremilast UK Package Leaflet (June 2020)
- Gonda, I., “Therapeutic Aerosols,” in *Pharmaceutics: The Science of Dosage Form Design* pp. 341-358 (Aulton, M., ed. 1988)
- Barbosa, J., et al., “Montelukast medicines of today and tomorrow: from molecular pharmaceutics to technological formulations,” *Drug Delivery* 23(9): 3257-3265 (2016)
- Boswell-Smith, V., et al., “The Pharmacology of Two Novel Long-Acting Phosphodiesterase 3/4 Inhibitors, RPL554 [9,10-Dimethoxy-2(2,4,6-trimethylphenylimino)-3-(N-carbamoyl-2-aminoethyl)-3,4,6,7-tetrahydro-2H-pyrimido[6,1-a]isoquinolin-4-one] and RPL565 [6,7-Dihydro-2-(2,6-diisopropylphenoxy)-9,10-dimethoxy-4H-pyrimido[6,1-a]isoquinolin-4-one],” *J. Pharmacology & Experimental Therapeutics* 318(2):840-848 (2006)
- Brunnée, T., et al., “Bronchodilatory effect of inhaled zardaverine, a phosphodiesterase III and IV inhibitor, in patients with asthma,” *Eur. Respir. J.* 5:982-985 (1992)
- Compton, C., et al., “Cilomilast, a selective phosphodiesterase-4 inhibitor for treatment of patients with chronic obstructive pulmonary disease: a randomised, dose-ranging study,” *The Lancet* 358:265- 270 (2001)
- Daliresp® 03/2020 Prescribing Information
- Franciosi, L., et al. “Efficacy and safety of RPL554, a dual PDE3 and PDE4 inhibitor, in healthy volunteers and in patients with asthma or chronic obstructive pulmonary disease: findings from four clinical trials,” *Lancet Respir. Med.* 1:714-727 (2013)
- Gale, D., et al. “Pharmacokinetic and pharmacodynamic profile following oral administration of the phosphodiesterase (PDE)4 inhibitor V11294A in healthy volunteers,” *Brit. J. Clinical Pharmacology* 54:478-484 (2002)
- Gale, D., et al. “Pharmacology of a new cyclic nucleotide phosphodiesterase type 4 inhibitor, V11294,” *Pulmonary Pharmacology & Therapeutics* 16:97-104 (2003)
- Giembycz, M., “Cilomilast: a second generation phosphodiesterase 4 inhibitor for asthma and chronic obstructive pulmonary disease,” *Expert Opinion on Investigational Drugs* 10(7):1361-1379 (2005)
- Giembycz, M., “An update and appraisal of the cilomilast Phase III clinical development programme for chronic obstructive pulmonary disease,” *Brit. J. Clinical Pharmacology* 62(2):138-152 (2006)
- Gozzard, N., “Effect of the glucocorticosteroid budesonide and a novel Phosphodiesterase type 4 inhibitor CDP840 on antigen-induced airway responses in



neonatally immunised rabbits,” *Brit. J. Pharmacology* 118(5):1201-1208 (1996)

- Harbinson, P.L., et al. “The effect of a novel orally active selective PDE4 isoenzyme inhibitor (CDP840) on allergen-induced responses in asthmatic subjects,” *Eur. Respiratory J.* 10:1008-1014 (1997)
- Otezla® 07/2019 Prescribing Information
- Otezla® 06/2020 Prescribing Information
- Phillips, J., “Inhaled Phosphodiesterase 4 (PDE4) Inhibitors for Inflammatory Respiratory Diseases,” *Frontiers in Pharmacology* 11:259 (March 2020)
- Pink Sheet, Merck/Celltech \$48 Mil., Five-Year Asthma Drug Collaboration, Informa Pharma Intelligence (August 1, 1994) available at: <https://medtech.pharmaintelligence.informa.com/PS024840/MERCKCELLTECH-48-MIL-FIVEYEAR-ASTHMA-DRUG-COLLABORATION?vid=Pharma>.
- Rodger, I., “From Bench to Bedside: The Hurdles of Discovering a New Leukotriene Receptor Antagonist,” *Am. J. Respiratory & Critical Care Med.* 161:S7-S10 (2000)
- Roflumilast NDA approval letter, NDA 022522 (Feb. 28, 2011)
- Roflumilast UK Package Leaflet (Aug. 2020)
- Ruppert, D. & Weithmann, K., “HL 725, An Extremely Potent Inhibitor of Platelet Phosphodiesterase and Induced Platelet Aggregation In Vitro,” *Life Sciences* 31:2037-2043 (1982)
- Singh, D., et al. “The short-term bronchodilator effects of the dual phosphodiesterase 3 and 4 inhibitor RPL554 in COPD,” *Eur. Respiratory J.* 52:1801074 (2018)
- Torphy, T.J., et al., “Ariflo™ (SB 207499), a Second Generation Phosphodiesterase 4 Inhibitor for the Treatment of Asthma and COPD: from Concept to Clinic,” *Pulmonary Pharmacology & Therapeutics* 12:131-135 (1999)
- Zussman, B., et al., “Bioavailability of the Oral Selective Phosphodiesterase 4 Inhibitor Cilomilast,” *Pharmacotherapy* 12(6):653-660 (2001)
- Study Report 121401: Therapeutic Index of SelCIDs in Ferret Lung Neutrophilia and Emesis Model
- Apremilast Protocol CC-10004-PSOR-008, A Phase 3, Multicenter, Randomized, Double-Blind, Placebo-Controlled, Efficacy and Safety Study of Apremilast (CC-10004) in Subjects with Moderate to Severe Plaque Psoriasis



- Apremilast Clinical Study Report CC-10004-PSOR-008, A Phase 3, Multicenter, Randomized, Double-Blind, Placebo-Controlled, Efficacy and Safety Study of Apremilast (CC-10004) in Subjects with Moderate to Severe Plaque Psoriasis
- Apremilast Clinical Study Report CC-10004-PSOR-005-E-LTE, A Phase 2B, Multicenter, Randomized, Double-Blind, Placebo-Controlled, Dose-Ranging, Efficacy and Safety Study of Apremilast (CC-10004) in Subjects with Moderate-to-Severe Plaque-Type Psoriasis (PSOR-005) and Two Extension Studies (PSOR-005E & PSOR-005LTE)
- Apremilast Clinical Study Report CC-10004-PSA-002, A Phase 3, Multicenter, Randomized, Double-Blind, Placebo-Controlled, Parallel-Group, Efficacy and Safety Study of Two Doses of Apremilast (CC-10004) in Subjects with Active Psoriatic Arthritis
- Apremilast Clinical Study Report CC-10004-PSA-001, A Phase 2, Multicenter, Randomized, Double-Blind, Placebo-Controlled, Parallel-Group, Efficacy and Safety Study of Two Dose Regimens of CC-10004 in Subjects with Active Psoriatic Arthritis
- Apremilast Clinical Study Report CC-10004-PSOR-009, A Phase 3, Multicenter, Randomized, Double-Blind, Placebo-Controlled, Efficacy and Safety Study of Apremilast (CC-10004) in Subjects with Moderate to Severe Plaque Psoriasis
- Apremilast Clinical Study Report CC-10004-PSA-004, A Phase 3, Multicenter, Randomized, Double-Blind, Placebo-Controlled, Parallel-Group, Efficacy and Safety Study of Two Doses of Apremilast (CC-10004) in Subjects with Active Psoriatic Arthritis and Qualifying Psoriasis Lesion
- Apremilast Clinical Study Report CC-10004-PSA-003, A Phase 3, Multicenter, Randomized, Double-Blind, Placebo-Controlled, Parallel-Group, Efficacy and Safety Study of Two Doses of Apremilast (CC-10004) in Subjects with Active Psoriatic Arthritis
- Apremilast Protocol CC-10004-PSOR-005, A Phase 2B, Multicenter, Randomized, Double-Blind, Placebo-Controlled, Dose-Ranging, Efficacy and Safety Study of Apremilast (CC-10004) in Subjects with Moderate-to-Severe Plaque-Type Psoriasis (Core Study)
- Clinical Study Report, CC-10004-PSOR-001 Open-Label, Single-Arm Pilot Study to Evaluate the Pharmacodynamics, Pharmacokinetics, Safety, and Preliminary Efficacy of CC-10004 in Subjects with Severe Plaque Type Psoriasis
- Clinical Study Report CC-10004-PK-007, A Phase I Study to Investigate the Safety, Pharmacokinetics and Pharmacodynamics of Ascending Multiple Oral Doses of CC-10004 in Healthy Subjects

- Clinical Study Report CC-10004 - A Phase I, Double-Blind, Placebo-Controlled Ascending Single and Multiple Oral Dose, Safety and Pharmacokinetic Study in Healthy Subjects
- Celgene IND 70,270 transmittal of updated Investigator's Brochure (Version 5.0) dated October 31, 2007
- Celgene IND 70,270 letter to FDA re word copy of Protocol CC-10004-PSOR-001
- Emer, J., et al., "A Practical Approach to Monitoring Patients on Biological Agents for the Treatment of Psoriasis," *The Journal of Clin. Aesthetic Derm.*, Vol. 3(8): 20-26 (Aug. 2010)
- Kim, J. and Scialli, A., "Thalidomide: The Tragedy of Birth Defects and the Effective Treatment of Disease," *Toxicological Sciences*, 122(1), 1-6 (2011)
- Vargesson, N., "Thalidomide-Induced Teratogenesis: History and Mechanisms," *Birth Defects Res. (Part C)*, 105: 140-156 (2015)
- Kaffenberger, B., et al., "Immunotargeting in the Management of Psoriasis," *ImmunoTargets and Therapy*, Vol. 2: 51-60 (2013)
- Linden, K., et al., "Psoriasis: Current Perspectives with an Emphasis on Treatment," *Am. J Med.* 107:595-605 (December 1999)
- Norman, P., "PDE4 inhibitors 2001. Patent and literature activity 2000-September 2001," *Expert Opin. Ther. Patents* 12(1):93-111 (2002)
- Celgene Drug Discovery Study Report, Anti-Inflammatory Activities of the Novel PDE4 Inhibitor CC-10004 Against Human Leukocytes in Vitro
- Strand, V., et al. "Improvements in patient-reported outcomes with apremilast, an oral phosphodiesterase 4 inhibitor, in the treatment of moderate to severe psoriasis: results from a phase IIb randomized, controlled study," *Health and Quality of Life Outcomes* 11:82 (2013)
- Celgene Discovery of Apremilast: A Selective PDE4 Inhibitor
- Papp, K., et al. "Apremilast Improves Pruritus in Patients with Moderate to Severe Plaque Psoriasis: Results from a Phase 2b, Randomized, Controlled Study." Presented at the 71st Annual Meeting of the American Academy of Dermatology; March 1-5, 2013; Miami Beach, FL.
- Reid, et al. Psoriasis and Treatment: Past, Present and Future Aspects. *Acta. Derm. Venerol.* 100(3):69-79 (2020)

- DALIRES<sup>®</sup> 01/2018 Label
- ENBREL<sup>®</sup> Label (Sep. 27, 2004)
- HUMIRA<sup>®</sup> 01/2008 Label
- COSENTYX<sup>™</sup> 01/2015 Label
- SILIQ<sup>™</sup> 02/2017 Label
- STELARA<sup>™</sup> 09/2009 Label
- TALTZ<sup>™</sup> 03/2016 Label
- TREMFYA<sup>™</sup> 07/2017 Label
- RAYOS<sup>™</sup> 12/2019 Label
- HUMIRA<sup>®</sup> 09/2005 Label
- Betts, K., et al., “An Indirect Comparison and Cost Per Responder Analysis of Adalimumab, Methotrexate and Apremilast in the Treatment of Methotrexate-Naive Patients with Psoriatic Arthritis,” *Current Med. Res. Opin.* Vol. 32(4): 721-729 (2016)
- del Alcazar, E., et al., “Real-World Effectiveness and Safety of Apremilast in Psoriasis at 52 Weeks: A Retrospective, Observational, Multicentre Study by the Spanish Psoriasis Group,” *J. Eur. Acad. Dermatology Venereol.* Vol. 34(12): 2821-2829 (Dec. 2020)
- Kishimoto, M., et al., “Real-world Use of Apremilast For Patients with Psoriasis in Japan,” *J. of Dermatology* 45(11): 1345-1348 (2018)
- Armstrong, A., et al., “Comparative Efficacy and Incremental Cost Per Responder of Methotrexate Versus Apremilast for Methotrexate-Naïve Patients with Psoriasis,” *J. Am. Acad. Dermatol.* 75(4): 740-746 (Oct. 2016)
- Kawalec, P., et al. “Comparative Effectiveness of Abatacept, Apremilast, Secukinumab, and Ustekinumab Treatment of Psoriatic Arthritis: A Systemic Review and Network Meta-Analysis,” *Rheumatology Int'l* 38:189-201 (Dec. 2017)
- “Apremilast (Otezla). No Progress in Plaque Psoriasis or Psoriatic Arthritis,” *Prescrire International* 25(172): 149-51 (2016)
- Ceponis, A. and Kavanaugh, A., “Use of Methotrexate in Patients with Psoriatic Arthritis,” *Clin. Exp. Rheum.* 28(Suppl. 61): S132-137 (2010)

- Saad, A., et al. "Efficacy and Safety of Anti-TNF Therapies in Psoriatic Arthritis: An Observational Study from the British Society for Rheumatology Biologics Register," *Rheumatology* 49: 697-705 (2010)
- Reid, C. and Griffiths, C., "Psoriasis and Treatment: Past, Present, and Future Aspects," *Acta. Derm. Venereal.*, 100:69-79 (2020)
- Jones, K. and Patel, S., "A Family Physician's Guide to Monitoring Methotrexate," *Am. Fam. Physician*, Vol. 62(7): 1607-1612 (Oct. 2000)
- Hsia, E., et al. "Infliximab (Remicade®): From Bench to Clinical Practice. A Paradigm Shift in Rheumatology Practice," *APLAR J. of Rheum.* 9:107-118 (2006)
- Whittle, S.L. and Hughes, R.A. "Folate Supplementation and Methotrexate Treatment in Rheumatoid Arthritis: A Review," *Rheumatology* 43:267-271 (Jan. 2004)
- Rendon, A. and Schakel, K. "Psoriasis Pathogenesis and Treatment," *Int. J. Mol. Sci.* 20: 1-28 (2019)
- Wittmann, M. and Helliwell, P. "Phosphodiesterase 4 Inhibition in the Treatment of Psoriasis, Psoriatic Arthritis and Other Chronic Inflammatory Diseases," *Dermatol. Ther. (Heidelb)* 3:1-15 (2013)
- Bartos, S., et al. "Review of Maintenance of Response to Psoriasis Treatments," *J. of Derm. Treatment*, 27(4): 293-297 (2016)
- Lie, E. et al. "Effectiveness and Retention Rates of Methotrexate in Psoriatic Arthritis in Comparison with Methotrexate-Treated Patients with Rheumatoid Arthritis," *Ann. Rheum. Dis.* 69: 671-676 (2010)
- Rigby, W. et al. "Review of Routine Laboratory Monitoring for Patients with Rheumatoid Arthritis Receiving Biologic or Nonbiologic DMARDs," *Int. J. Rheumatol.* (Oct. 31, 2017)
- Humira® 12/2020 Package Insert
- Stelara® 12/2020 Label
- Remicade® 05/2020 Label
- Otezla NDA Approval Letter, NDA 205437 (Mar. 21, 2014)
- Fleiss, J., *Statistical Methods for Rates and Proportions* pp. 101, 108 (Wiley, 2d ed. 1981)

- Freedman, D., Pisani, R., and Purves, R., Statistics, pp. 3-12, 97-109, 482 (4th Edition, W. W. Norton & Company, 2007)
- Jewell, N.P., Statistics for Epidemiology pp. 70-71 (CRC Press 2004)
- Rosenbaum, P., Observational Studies, pp. 86, 234-237 (2nd Edition, Springer-Verlag, 2002)
- Kruger, G., et al., "Two considerations for patients with psoriasis and their clinicians: what defines mild, moderate, and severe psoriasis? What constitutes a clinically significant improvement when treating psoriasis?" J. Am. Acad. Derm. 43(2):281-2585 (August 2000)
- Warriar et al., "Effect of drug sample availability on physician prescribing behavior: A systematic review," Clinical Reviews and Opinions, 2(4): 41-48 (2010)
- Symm et al., "Effects of Using Free Sample Medications on the Prescribing Practices of Family Physicians," J. Am. Board Fam. Med., 19(5): 443-449 (2006)
- Chew et al., "A Physician Survey of the Effect of Drug Sample Availability on Physicians' Behavior," J. Gen. Intern. Med., 15: 478-483 (2000)
- "Efficacy and Safety Study of Apremilast (CC-10004) in Subjects with Moderate-to-Severe Plaque-Type Psoriasis (Core Study)," Clinical Trial No. NCT00773734 v8 (Feb. 26, 2014)
- Brown, J. and Davies, S. "Chemical asymmetric synthesis," Nature 342:631-636 (December 7, 1989)
- Wong, V. and Lebwohl, M. "Treatment of psoriatic arthritis with etanercept, a tumour necrosis factor antagonist," Expert Opinion on Biological Therapy 5(11): 1505-1513 (2005)
- International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use Guideline, Q3C Impurities: Residual Solvents (1997)
- International Conference on Harmonisation, Q6A Specifications: Test Procedures and Acceptance Criteria for New Drug Substances and New Drug Products: Chemical Substances, 62 Fed. Reg. 62890 (Nov. 25, 1997)
- Mark J. Kontny et al., Chapter 12 – Sorption of Water by Solids, in Physical Characterization of Pharmaceutical Solids 387-418 (Harry G. Brittain ed., 1995)
- Raj Suryanarayanan, Chapter 7 – X-Ray Powder Diffractometry, in Physical Characterization of Pharmaceutical Solids 187-221 (Harry G. Brittain ed., 1995)

- Terence L. Threlfall, Analysis of Organic Polymorphs, A Review, 120 Analyst 2435-2460 (Oct. 1995)
- Vippagunta, S. R., et al. "Crystalline Solids," Advanced Drug Delivery Reviews 48:3-26 (2001)
- Gu, C.H., et al., "Polymorph Screening: Influence of Solvents on the Rate of Solvent-Mediated Polymorphic Transformation," 90(11) J. Pharm. Sci. 1878-90 (November 2001)
- J. Bernstein, "X-Ray Crystallography" excerpts, in Polymorphism in Molecular Crystals pp. 117-119 and 133 (Clarendon Press 2002)

Defendants further discloses that Defendants do not intend to rely upon at trial any person who may be a prior inventor or may have prior knowledge of or may have previously used or offered for sale the invention of the patents-in-suit.

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**CERTIFICATE OF SERVICE**

I hereby certify that on this 14th day of May, 2021, I caused a true and correct copy of **DEFENDANTS' NOTICE PURSUANT TO 35 U.S.C. § 282** to be electronically filed with the Clerk of the United States District Court for the District of New Jersey and served upon all counsel of record via Electronic Case Filing (ECF).

Dated: May 14, 2021

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